

LAW OFFICES
SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
WASHINGTON, DC 20037-3213
TELEPHONE (202) 293-7060
FACSIMILE (202) 293-7860
www.sughrue.com

October 26, 2000

BOX PATENT APPLICATION
Assistant Commissioner for Patents
Washington, D.C. 20231

Re: Application of Shinsuke HENMI, Kyouhei YAMAMOTO and
Toshinori TANAKA
BRUSH HOLDER FOR DYNAMO-ELECTRIC MACHINE
Our Ref. Q61431

Dear Sir:

Attached hereto is the application identified above including 17 pages of specification, claims and Abstract, 11 sheets of formal drawing (Figures 1-14), executed Assignment and PTO 1595 form, executed Declaration/Power of Attorney, an Information Disclosure Statement and PTO form 1449, and the certified priority document.

The Government filing fee is calculated as follows:

Total claims	20 - 20	=		x	\$18.00	=	\$0.00
Independent claims	1 - 3	=		x	\$80.00	=	\$0.00
Base Fee							\$710.00

TOTAL FILING FEE	\$710.00
Recordation of Assignment	\$40.00
TOTAL FEE	\$750.00

Checks for the statutory filing fee of **\$710.00** and Assignment recordation fee of **\$40.00** are attached. You are also directed and authorized to charge or credit any difference or overpayment to Deposit Account No. 19-4880. The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §§ 1.16 and 1.17 and any petitions for extension of time under 37 C.F.R. § 1.136 which may be required during the entire pendency of the application to Deposit Account No. 19-4880. A duplicate copy of this transmittal letter is attached.

Priority is claimed from August 29, 2000 based on Japanese Application No. 2000-258695. The priority document is enclosed herewith.

Respectfully submitted,
SUGHRUE, MION, ZINN,
MACPEAK & SEAS, PLLC
Attorneys for Applicant

By: Robert J. Seay, Jr.
Robert J. Seay, Jr.
Registration No. 21,092

Our Ref.: MD-774 (525629)

TITLE OF THE INVENTION

BRUSH HOLDER FOR DYNAMO-ELECTRIC MACHINE

BACKGROUND OF THE INVENTION

5 FIELD OF THE INVENTION

The present invention relates to a structure of a brush holder used in a dynamo-electric machine.

DISCUSSION OF BACKGROUND

Figures 12a and 12b illustrate a conventional brush
10 holder for a dynamo-electric machine. Figure 12a is a plan view of the brush holder, wherein components of the brush holder are assembled. Figure 12b is a plan view, whereby a part of the components is disassembled.

In Figures 12a and 12b, numerical reference 21
15 designates a brush holder base; numerical reference 22 designates a brush; numerical reference 23 designates a metallic brush holder; numerical reference 24 designates a plate; numerical reference 25 designates a pigtail; numerical reference 26 designates a terminal plate; and
20 numerical reference 27 designates a spring.

Figure 13 is a perspective view of the metallic brush holder 23 and the plate 24 illustrating a state of assembling these. Figure 14 is a side cross-sectional
view of the metallic brush holder 23 and the plate 24.

25 The terminal plate 26 is formed by insert-molding, wherein after locating the plate 24 in the brush holder base 21, the metallic brush holder 23 is fixed by

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caulking. After assembling the metallic brush holder 23, the spring 27 is assembled inside the metallic brush holder 23, and thereafter the brush 22 is assembled. A position where the terminal plate 26 and the pigtail 25 are welded is a side of the metallic brush holder 23.

Because the conventional brush holder is constructed as described above, the terminal plate 26 is connected to the pigtail on a right side or a left side of the brush 22. Therefore, sliding of the brush was affected depending on a state of the pigtail, whereby there were problems that an operating noise of a motor and ripples of torque were increased, and that, in a dynamo-electric machine rotatable in both directions, differences of torques, of the numbers of revolutions, of operating noises, and of ripples of torques were different with respect to the rotating directions.

SUMMARY OF THE INVENTION

It is an object of the present invention to solve the above-mentioned problems inherent in the conventional technique and to provide a brush holder, which can reduce ripples of torque and operating noises in a dynamo-electric machine.

Another object of the present invention is to provide a brush holder, which can reduce differences of numbers of revolutions and torques with respect to both directions in a dynamo-electric machine rotatable in the both directions, also can reduce differences of ripples

of torque with respect to the directions, and also can reduce differences of operating noises with respect to the directions, wherein when the brush holder is applied to the motor for an electric power steering, effects
5 demonstrated by the brush holder device are remarkable.

According to a first aspect of the present invention, there is provided a brush holder, wherein a spring and a brush are set in a brush holder base, and a terminal plate and a pigtail are connected in an area
10 within 90° from an introducing portion of the pigtail in the brush toward an outside of the brush holder.

According to a second aspect of the present invention, there is provided the brush holder device for the dynamo-electric machine, wherein the terminal and the
15 pigtail are connected in an area around a sliding axis of the brush within the width of the brush.

According to a third aspect of the present invention, there is provided the brush holder for the dynamo-electric machine, wherein the pigtail is
20 introduced from the brush in a direction toward a motor shaft.

According to a fourth aspect of the present invention, there is provided the brush holder for the dynamo-electric machine, wherein a column is located in
25 the terminal plate to connect with the pigtail.

According to a fifth aspect of the present invention, there is provided the brush holder for the

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dynamo-electric machine, wherein the pigtail is introduced from a backside of the brush.

According to a sixth aspect of the present invention, there is provided the brush holder for the
5 dynamo-electric machine, wherein the dynamo-electric machine is rotatable in both directions.

According to a seventh aspect of the present invention, there is provided the brush holder for the dynamo-electric machine, wherein the dynamo-electric
10 machine is a motor for an electric power steering.

BRIEF DESCRIPTION OF THE DRAWINGS

A more complete appreciation of the invention and many of the attendant advantages thereof will be readily obtained as the same becomes better understood by
15 reference to the following detailed description when considered in connection with the accompanied drawings, wherein:

Figure 1 is a plan view illustrating a brush holder for a dynamo-electric machine according to Embodiment 1
20 of the present invention in a disassembled state;

Figure 2 is a side view of the brush holder of the dynamo-electric machine according to Embodiment 1 in a disassembled state;

Figure 3 is a plan view of the brush holder of the dynamo-electric machine according to Embodiment 1 in a
25 completely assembled state;

Figure 4 is a cross-sectional view of the brush

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embodiments of the present invention in reference to Figure 1 through 11 as follows, wherein the same numerical references are used for the same or similar portions and descriptions of these portions is omitted.

5 EMBODIMENT 1

Figure 1 is a plan view of the brush holder of the dynamo-electric machine according to Embodiment 1 of the present invention in the disassembled state provided to show various components of the brush holder. Figure 2 is
10 the side view of the brush holder in the disassembled state. Figure 3 is a plan view illustrating the brush holder which is completed by assembling various components. Figure 4 is the cross-sectional view taken along the line A-A of the brush holder illustrated in
15 Figure 3.

In the figures, numerical reference 1 designates a first terminal plate; numerical reference 2 designates a brush holder base; numerical reference 3 designates a second terminal plate; numerical reference 4 designates a
20 spring; numerical reference 5 designates a step for temporal tacking, located in the brush holder base 2; numerical reference 6 designates a brush; and numerical reference 7 designates a brush holder cover.

As illustrated in the figures, a terminal plate 1,
25 i.e. the first terminal plate, is set in a lower portion of the brush holder base 2, made of a thermo-set resin such as phenol as shown in Figure 2, and fixed by

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respectively caulking at seven positions, namely protrusions 1a through 1g of the terminal plate 1 and holes 2a through 2g of the brush holder base 2.

In the next, a terminal plate 3, i.e. the second terminal plate, which is different from the terminal plate 1, is inserted from an upper side of the brush holder base 2. In the next, the spring 4 is set in the step for temporary tacking 5 from the upper side. In the next, the pigtail 6a of the brush 6 is welded to columns 1a and 3a of the terminal plate 1 and the terminal plate 3. Thus welded pigtail 6a is set from an upper side of the brush holder as illustrated in Figure 4. Thereafter, the terminal plate 1 is connected to the terminal plate 3 by welding at a portion B, and finally the brush holder cover 7, made of the thermo-set resin such as phenol, is set.

As illustrated in Figure 3, the terminal plate 13 is connected to the pigtail 6a in an area within 90° from an introducing portion of the pigtail in the brush 6, wherein the pigtail 6a is introduced in a direction of a motor shaft. Accordingly, it is possible to reduce a bad influence against a sliding motion of the brush 6 caused by flexibility of the pigtail 6a and vibration of the brush 6 in radial directions, whereby operating noises and ripples of torque in the dynamo-electric machine can be reduced. Further, because all pigtails extend in radial directions, in a dynamo-electric machine rotatable

in both directions, differences of numbers of revolutions, of torques, of ripples of the torques, and of operating noises between the directions can be reduced.

Further, although an example that four brushes are used as illustrated above, the present invention is not limited to the brush holder having four brushes.

Further, the pigtail 6a is connected to the columns 1a, 3a of the terminal plates in an area around a sliding axis of the brush 6 within the width 6b of the brush and in a backside of the introducing portion of the pigtail in the brush 6.

According to the present invention, it is possible to reduce ripples of torque and operating noises by

15 connecting the pigtail 6a in the area within 90° on a backside from the introducing portion of the pigtail from the brush 6.

Further, by introducing the pigtail 6a from the brush 6 in the direction toward the motor shaft and connecting a tip of the pigtail 6a to the terminals 1, 3 in the area within 90° in the backside from the introducing portion of the pigtail in the brush 6, it is possible to reduce ripples of torque and operating noises in the dynamo-electric machine.

25 Further, in the dynamo-electric machine rotatable in
both directions, by connecting the pigtail 6a to the
terminals 1, 3 in the area within 90° on the backside

from the introducing portion of the pigtail in the brush
6, it is possible to reduce ripples of torque and
operating noises. Further, it is possible to reduce
differences of numbers of revolutions, of torques, of
5 ripples of torques, and of operating noises with respect
to the directions because the pigtails 6a of all brushes
6 have the same or substantially the same shapes.

Further, the brush holder according to the present
invention is extremely effective as a brush holder for a
10 dynamo-electric machine for an electric power steering,
rotatable in both directions.

EMBODIMENT 2

Figure 5 is a plan view illustrating the brush
holder according to Embodiment 2 of the present
15 invention. Figure 6 is the cross-sectional view taken
along the line C-C of the brush holder illustrated in
Figure 5. Embodiment 2 is an improvement of a part of
the conventional brush holder illustrated in Figures 12
through 14.

20 In the Figures, numerical reference 8 designates a
brush holder base; numerical reference 9 designates a
brush; numerical reference 10 designates a metallic brush
holder; numerical reference 11 designates a plate;
numerical reference 12 designates a pigtail; numerical
25 reference 13 designates a terminal plate; and numerical
reference 14 designates a spring.

Figure 7 is a plan view illustrating the plate 11.

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Figure 8 is a perspective view illustrating a state that the metallic brush holder 10 and the plate 11 are disassembled to show how these are assembled.

As illustrated in Figure 12, in the conventional
5 brush holder, the pigtail 25 is directly welded to the terminal plate 26. However, in Embodiment 2, a column 11a of the plate 11 is elongated in comparison with the conventional brush holder, the column 11a is welded to the pigtail 12, a protrusion 11b is formed in a part of
10 the plate 11, and the pigtail 12 is connected to the terminal plate 13 by welding the protrusion 11b to the terminal plate 13.

Accordingly, in a manner similar to that in Embodiment 1, the pigtail 12 is welded in an area within
15 90° on a backside from an introducing portion of the pigtail in the brush 9, whereby it is possible to introduce the pigtail 12 in a direction toward a motor shaft.

Although an example that four brushes are used is
20 described above, the brush holder according to the present invention is not limited to that having four brushes.

EMBODIMENT 3

Figure 9 is the plan view illustrating the brush
25 holder according to Embodiment 3 of the present invention. Figure 10 is a side view illustrating the brush. Figure 11 is the cross-sectional view of the

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brush holder illustrated in Figure 9 taken along the line D-D. According to Embodiment 3, a structure is substantially the same as that in Embodiment 1. However it is different from that of Embodiment 1 at a point that the pigtail 6a is introduced from a backside of the brush 6 as illustrated in Figure 10.

As illustrated in the figures, the pigtail 6a is introduced in a direction of a sliding axis from the brush 6, and is welded to the terminals 1 and 3 in an area within 90° in the backside from an introducing portion of the pigtail in the brush 6. Although in the above structure, an example that four brushes are used is shown, the brush holder according to Embodiment 3 is not limited to that having four brushes.

As described, according to Embodiment 3, the pigtail 6a is introduced in the sliding axis of the brush from the brush 6, and the pigtail 6a is connected to the terminals 1 and 3 in the area within 90° on the backside from the introducing portion of the pigtail in the brush 6, whereby it is possible to reduce ripples of torque and an operating noise of a dynamo-electric machine.

In Embodiments 1 through 3, the examples that the pigtail is connected to the terminal by welding, the connection is not limited to welding and may be connections such as caulking or screwing.

Further, the example that the connection is located in the area within 90° on the backside from the

introducing portion of the pigtail in the brush is shown, if the connection is located in an area within a smaller angle than 90° , namely a position in the vicinity of a back of the introducing portion of the pigtail in the
5 brush, the ripples of torque and the operating noise can be reduced, and the differences of numbers of revolutions, of the torques, of the ripples of torques, and of the operating noises can be effectively reduced.

Further although the example that the metallic plate
10 is used as the terminal, the terminal is not limited to the metallic plate and may be a lead wire or the like.

The first advantage of the brush holder of the dynamo-electric machine according to the present invention is that the ripples of torque and the operating
15 noise can be reduced.

The second advantage of the brush holder of the dynamo-electric machine according to the present invention is that the pigtail is easily connected to the terminal plate.

20 The third advantage of the brush holder of the dynamo-electric machine according to the present invention is that the differences of numbers revolutions, of the torques, of the ripples of the torques, and of the operating noises with respect to the both directions can
25 be reduced.

Obviously, numerous modifications and variations of the present invention are possible in light of the above

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teachings. It is therefore to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described herein.

- 5 The entire disclosure of Japanese Patent Application No. 2000-258695 filed on August 29, 2000 including specification, claims, drawings and summary are incorporated herein by reference in its entirety.

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WHAT IS CLAIMED IS:

1. A brush holder for a dynamo-electric machine, wherein a spring and a brush are set in a brush holder base, and a terminal plate and a pigtail are connected in an area within 90° from an introducing portion of the pigtail in the brush toward an outside of the brush holder.
2. The brush holder for the dynamo-electric machine according to Claim 1, wherein the terminal and the pigtail are connected in an area around a sliding axis of the brush within the width of the brush.
3. The brush holder for the dynamo-electric machine according to Claim 1, wherein the pigtail is introduced from the brush in a direction toward a motor shaft.
4. The brush holder for the dynamo-electric machine according to Claim 2, wherein the pigtail is introduced from the brush in a direction toward a motor shaft.
5. The brush holder for the dynamo-electric machine according to Claim 1, wherein a column is located in the terminal plate to connect with the pigtail.
6. The brush holder for the dynamo-electric machine according to Claim 2, wherein a column is located in the terminal plate to connect with the pigtail.
7. The brush holder for the dynamo-electric machine according to Claim 3, wherein a column is located in the terminal plate to connect with the pigtail.
8. The brush holder for the dynamo-electric machine according to Claim 1, wherein the pigtail is introduced

9. The brush holder for the dynamo-electric machine according to Claim 2, wherein the pigtail is introduced from a backside of the brush.

11. The brush holder for the dynamo-electric machine
according to Claim 4, wherein the pigtail is introduced
10 from a backside of the brush.

13. The brush holder for the dynamo-electric machine
15 according to Claim 2, wherein the dynamo-electric machine
is rotatable in both directions.

20 15. The brush holder for the dynamo-electric machine
according to Claim 4, wherein the dynamo-electric machine
is rotatable in both directions.

17. The brush holder for the dynamo-electric machine
according to Claim 1, wherein the dynamo-electric machine

is a motor for an electric power steering.

18. The brush holder for the dynamo-electric machine according to Claim 1, wherein the dynamo-electric machine is a motor for an electric power steering.

19. The brush holder for the dynamo-electric machine according to Claim 1, wherein the dynamo-electric machine is a motor for an electric power steering.

20. The brush holder for the dynamo-electric machine according to Claim 1, wherein the dynamo-electric machine

10 is a motor for an electric power steering.

ABSTRACT OF THE DISCLOSURE

Terminal plates 1 and 3 are located in a brush holder base 2, a spring 4 and a brush 6 are located in the brush holder base 2, the terminal plates 1 and 3 are
5 connected to pigtaills 6a, 12 in an area within 90° in a backside of an introducing portion of the pigtaills in the brush 6, whereby ripples of torque of a dynamo-electric machine are reduced, and an operating noise is reduced.

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FIG. 2

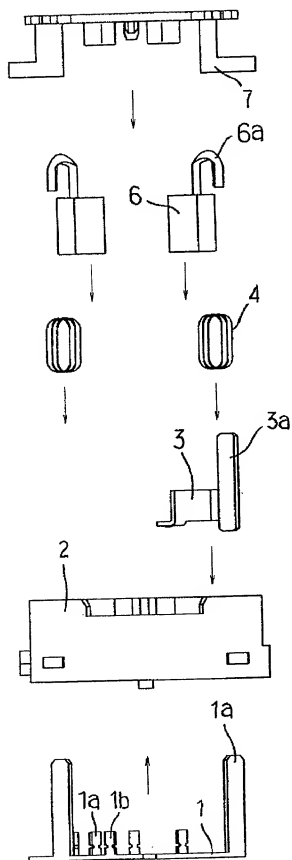


FIG. 3

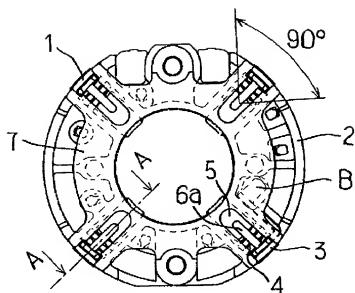


FIG. 4

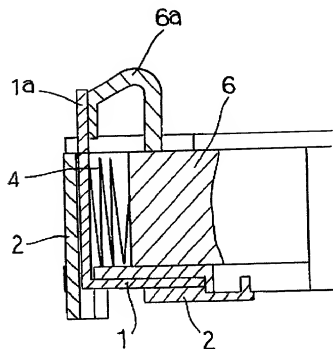


FIG. 5

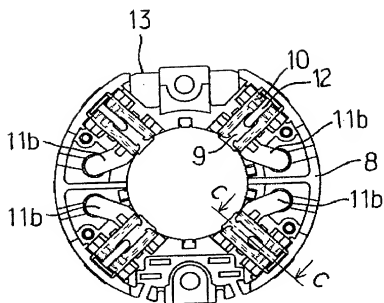


FIG. 6

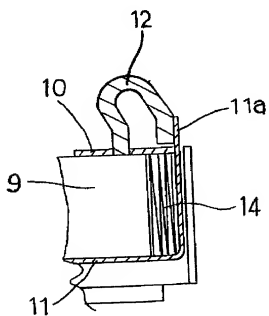


FIG. 7

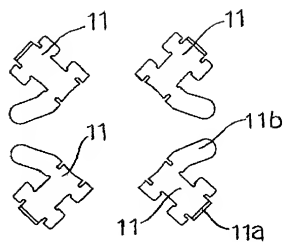
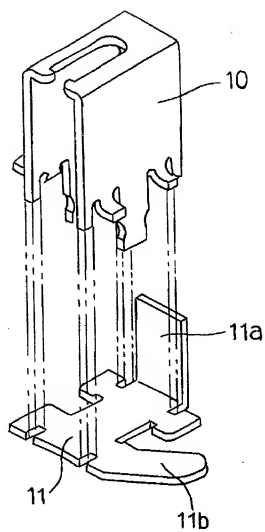


FIG. 8



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FIG. 9

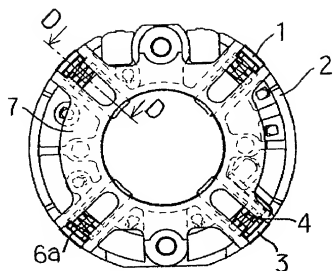


FIG. 10



FIG. 11

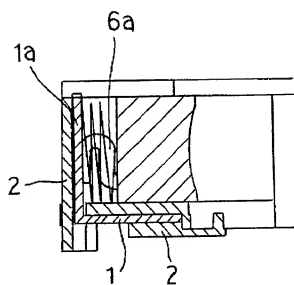


FIG. 12a

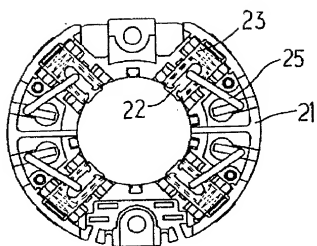


FIG. 12b

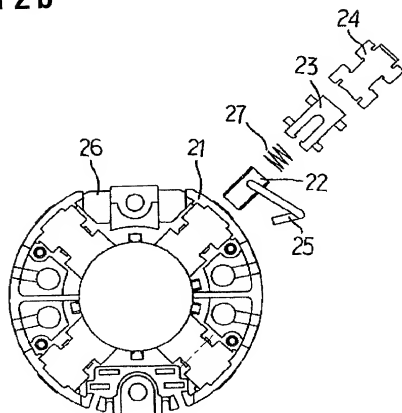


FIG. 13

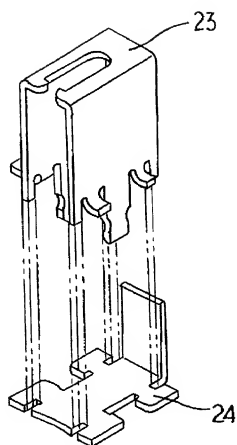
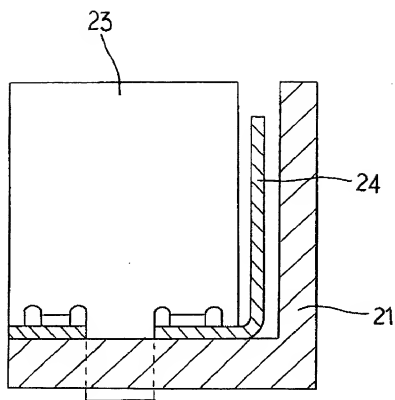


FIG. 14



Declaration and Power of Attorney for Patent Application

特許出願宣言書

Japanese Language Declaration

私は、下欄に氏名を記載した発明として、以下の通り宣言する：

As a below named inventor, I hereby declare that:

私の住所、郵便の宛先および国籍は、下欄に氏名に続いて記載したとおりであり、

My residence, post office address and citizenship are as stated below next to my name,

名称の発明に関し、請求の範囲に記載した特許を求める主題の本来の、最初にして唯一の発明者である（一人の氏名のみが下欄に記載されている場合）か、もしくは本来の、最初にして共同の発明者である（複数の氏名が下欄に記載されている場合）と信じ、

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

BRUSH HOLDER FOR DYNAMO-ELECTRIC

MACHINE

その明細書を
（該当するほうに印を付す）

the specification of which
(check one)

☐ ここに添付する。

☒ is attached hereto.

☐ _____ 日に出願番号

☐ was filed on _____ as

第 _____ 号として提出し、

Application Serial No. _____

_____ 日に補正した。
(該当する場合)

and was amended on _____
(if applicable)

私は、前記のとおり補正した請求の範囲を含む前記明細書の内容を検討し、理解したことを陳述する。

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

私は、連邦規則法典第37部第1章第56条(a)項に従い、本願の審査に所要の情報を開示すべき義務を有することを認める。

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

Japanese Language Declaration

私は、合衆国法典第35部第119条、第172条、又は第365条に基づく下記の外国特許出願又は発明者証出願の外国優先権利益を主張し、さらに優先権の主張に係わる基礎出願の出願日前の出願日を有する外国特許出願又は発明者証出願を以下に明記する：

Prior foreign applications

先の外国出願

2000-258695 (Number) (番号)	Japan (Country) (国名)	29/August/2000 (Day/Month/Year Filed) (出願の年月日)
_____ (Number) (番号)	_____ (Country) (国名)	_____ (Day/Month/Year Filed) (出願の年月日)
_____ (Number) (番号)	_____ (Country) (国名)	_____ (Day/Month/Year Filed) (出願の年月日)
_____ (Number) (番号)	_____ (Country) (国名)	_____ (Day/Month/Year Filed) (出願の年月日)
_____ (Number) (番号)	_____ (Country) (国名)	_____ (Day/Month/Year Filed) (出願の年月日)

Priority claimed
優先権の主張

<input checked="" type="checkbox"/>	<input type="checkbox"/>
Yes あり	No なし
<input type="checkbox"/>	<input type="checkbox"/>
Yes あり	No なし
<input type="checkbox"/>	<input type="checkbox"/>
Yes あり	No なし
<input type="checkbox"/>	<input type="checkbox"/>
Yes あり	No なし
<input type="checkbox"/>	<input type="checkbox"/>
Yes あり	No なし

私は、合衆国法典第35部第120条に基づく下記の合衆国特許出願の利益を主張し、本願の請求の範囲各項に記載の主題が合衆国法典第35部第112条第1項に規定の態様で先の合衆国出願に開示されていない限度において、先の出願の出願日と本願の国内出願日又はPCT国際出願日の間に公表された連邦規則法典第37部第1章第56条(a)項に記載の所要の情報を開示すべき義務を有することを認める。

I hereby claim the benefit of Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose any material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)
(出願番号)

(Filing Date)
(出願日)

(現況) (Status)
特許済み、係属中、放棄済み (patented, pending abandoned)

(Application Serial No.)
(出願番号)

(Filing Date)
(出願日)

(現況) (Status)
特許済み、係属中、放棄済み (patented, pending abandoned)

私は、ここに自己の知識に基づいて行った陳述がすべて真実であり、自己の有する情報及び憶するところに従って行った陳述が真実であると信じ、更に故意に虚偽の陳述等を行った場合、合衆国法典第18部第1001条により、罰金もしくは禁固に処せられるか、又はこれらの刑が併科され、又はかかる故意による虚偽の陳述が本願ないし本願に対して付与される特許の有効性を損なうことがあることを認識して、以上の陳述を行ったことを宣言する。

I hereby declare that all statements made herein of my own knowledge are true, and further that all statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Japanese Language Declaration

委任状: 私は、下記発明者として、以下の代理人をここに
選任し、本願の手続きを遂行すること並びにこれに関する一
切の行為を特許庁長官に対して行うことを委任する。
(代理人氏名及び登録番号を明記のこと)

POWER OF ATTORNEY: As a named inventor, I hereby
appoint the following attorney(s) and/or agent(s) to
prosecute this application and transact all business in the
Patent and Trademark Office connected therewith (list
name and registration number)

I hereby appoint John H. Mion, Reg. No. 18,879; Donald E. Zinn, Reg. No. 19,046; Thomas J. Macpeak, Reg. No. 19,292;
Robert J. Seas, Jr., Reg. No. 21,092; Darryl Mexic, Reg. No. 23,063; Robert V. Sloan, Reg. No. 22,775; Peter D. Olexy, Reg.
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Louis Gubinsky, Reg. No. 24,835; Neil B. Siegel, Reg. No. 25,200; David J. Cushing, Reg. No. 28,703; John R. Inge, Reg. No.
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H. Mandir, Reg. No. 32,156; Scott M. Daniels, Reg. No. 32,562; Brian W. Hannon, Reg. No. 32,778; Abraham J. Rosner, Reg.
No. 33,275; Bruce E. Kramer, Reg. No. 33,725; Paul F. Neils, Reg. No. 33,102; and Brett S. Sylvester, Reg. No. 32,765, my
attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and
request that all correspondence about the application be addressed to SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC, 2100
Pennsylvania Avenue, N.W., Washington, D.C. 20037-3202.

書類の送付先:

Send Correspondence to:

SUGHRUE, MION, ZINN, MACPEAK & SEAS
2100 Pennsylvania Avenue, N.W., Washington, D.C. 20037

直通電話連絡先: (名称及び電話番号)

Direct Telephone Calls to: (name and telephone number)

(202)293-7060

唯一の又は第一の発明者の氏名		Full name of sole or first inventor	
同発明者の署名		Shinsuke Henmi	
日付	Inventor's signature	Date	
	Shinsuke Henmi	October 12, 2000	
住所	Residence		
	Tokyo, Japan		
国籍	Citizenship		
	Japanese		
郵便の宛先	Post office address		
	c/o Mitsubishi Denki Kabushiki Kaisha 2-3, Marunouchi 2-chome, Chiyoda-ku, Tokyo, Japan		
第二の共同発明者の氏名 (該当する場合)		Full name of second joint inventor, if any	
同第二発明者の署名		Kyouhei Yamamoto	
日付	Second inventor's signature	Date	
	Kyouhei Yamamoto	October 12, 2000	
住所	Residence		
	Tokyo, Japan		
国籍	Citizenship		
	Japanese		
郵便の宛先	Post office address		
	c/o Mitsubishi Electric Engineering Co., Ltd. 6-2, Otemachi 2-chome, Chiyoda-ku, Tokyo, Japan		

(第三又はそれ以降の共同発明者に対しても同様な情報
および署名を提供すること。)

(Supply similar information and signature for third and
subsequent joint inventors.)

第三の共同発明者の氏名 (該当する場合)		Full name of third joint inventor, if any Toshinori Tanaka	
同第三発明者の署名	日付	Third inventor's signature Toshinori Tanaka	Date October 15 2000
住所		Residence Tokyo, Japan	
国籍		Citizenship Japanese	
郵便の宛先		Post office address c/o Mitsubishi Denki Kabushiki Kaisha 2-3, Marunouchi 2-chome, Chiyoda-ku, Tokyo, Japan	
第四の共同発明者の氏名 (該当する場合)		Full name of fourth joint inventor, if any	
同第四発明者の署名	日付	Fourth inventor's signature	Date
住所		Residence	
国籍		Citizenship	
郵便の宛先		Post office address	
第五の共同発明者の氏名 (該当する場合)		Full name of fifth joint inventor, if any	
同第五発明者の署名	日付	Fifth inventor's signature	Date
住所		Residence	
国籍		Citizenship	
郵便の宛先		Post office address	
第六の共同発明者の氏名 (該当する場合)		Full name of sixth joint inventor, if any	
同第六発明者の署名	日付	Sixth inventor's signature	Date
住所		Residence	
国籍		Citizenship	
郵便の宛先		Post office address	